NUCLEAR GROUND-STATE OBSERVABLES FROM RELATIVISTIC MEAN-FIELD MODELS: MASSES, DENSITIES, RADII, SINGLE-PARTICLE LEVELS

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We report on the current status of relativistic mean-field models for the calculation and prediction of nuclear ground-state observables. These models are quite powerful and can be applied to light (A $\geq$ 16), medium, and heavy nuclei (spherical and deformed) and allow realistic extrapolations to the drip lines and to superheavy nuclei. From a single calculation one obtains a plethora of microscopic information about the chosen nucleus. We discuss several of the corresponding observables that are then simultaneously calculated as well as the accuracy with which they can be determined within the current models. Finally, we discuss recent model enhancements, connections to more fundamental physics, and future work.

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